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Interactive three-dimensional female pelvis model for teaching purposes

Singer, Adrian P ; Winklehner, Thomas ; Betschart, Cornelia

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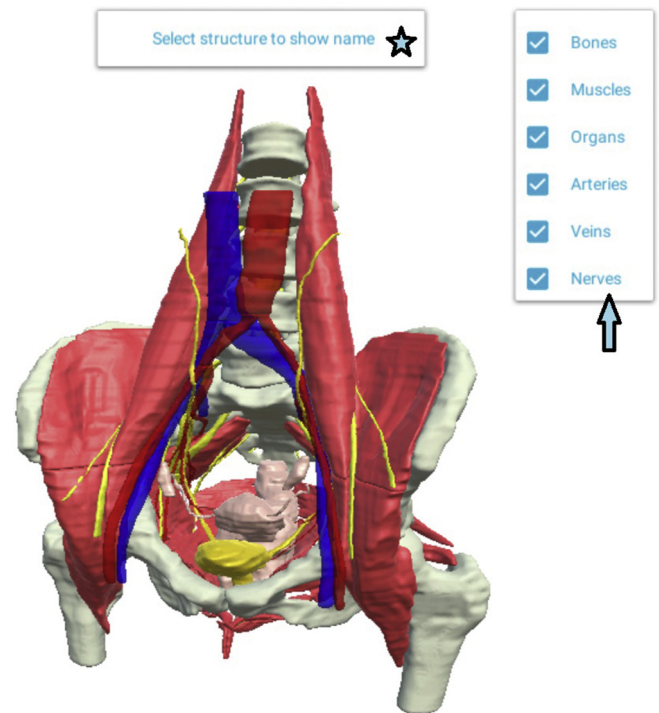
Interactive three-dimensional female pelvis model for teaching purposes

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A 3-dimensional (3D) model of the female pelvis was created using the 2-dimensional dataset of the “Visible Human Project” and modern imaging techniques (IrfanView, Sante DICOM Editor 6, 3D Slicer) to augment traditional anatomic learning for students and doctors. Using the segmentation tools in the 3D Slicer, the female pelvis was segmented, utilizing the 0.3-mm thick image slices, into 98 unique anatomic models. These models were further divided into different subsets, that is, bones, organs, muscles, nerves, and blood vessels. The resulting models were exported into a 3D model viewer using Unity (Figure 1) and a 3D PDF using Adobe Acrobat DC (Figure 2). The complete model is demonstrated on the following hyperlink: <https://3dpics.study/femalepelvis/>.

This unique model of the pelvis can be studied by rotating, tilting, zooming in or out, and viewing individual subsets separately (Figures 3 and 4). The chosen formats (hyperlink, PDF) are in open access and available to any users wishing to better understand the complex anatomy of the female pelvis. ■

FIGURE 1
Model overview of the pelvis



An overview of the online model of the pelvis (the star indicates the name of the selected structure; the arrow indicates the selected subsets of models).

Singer. Three-dimensional female pelvis model. *Am J Obstet Gynecol* 2020.

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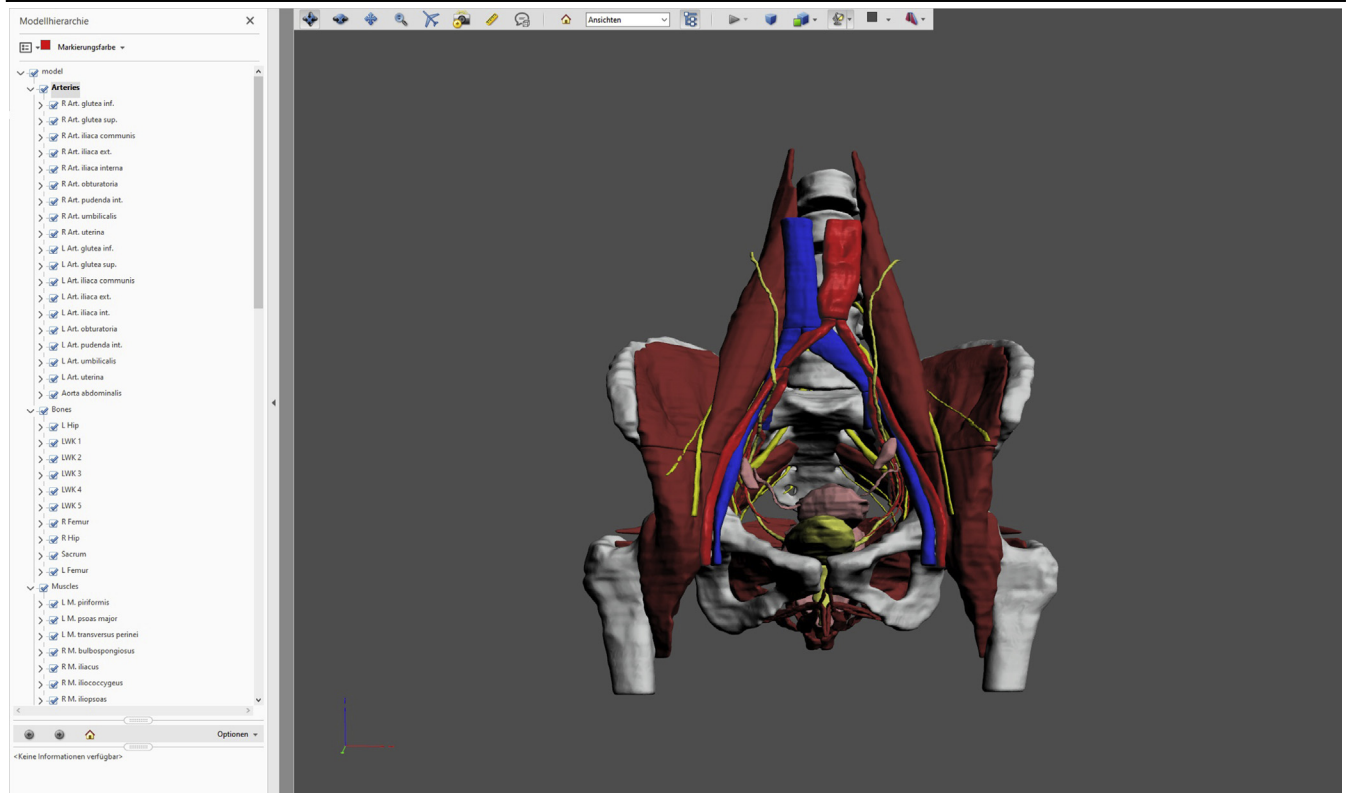
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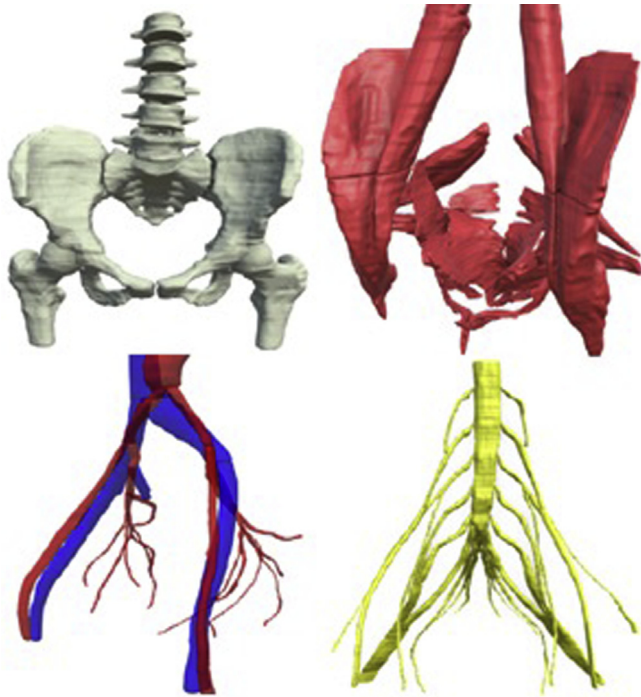
FIGURE 2
3D PDF file



An overview of the 3D PDF file showing the model of the pelvis on the right and the selected subsets of the model on the left. 3D, three dimensional.

Singer. Three-dimensional female pelvis model for teaching. *Am J Obstet Gynecol* 2020.

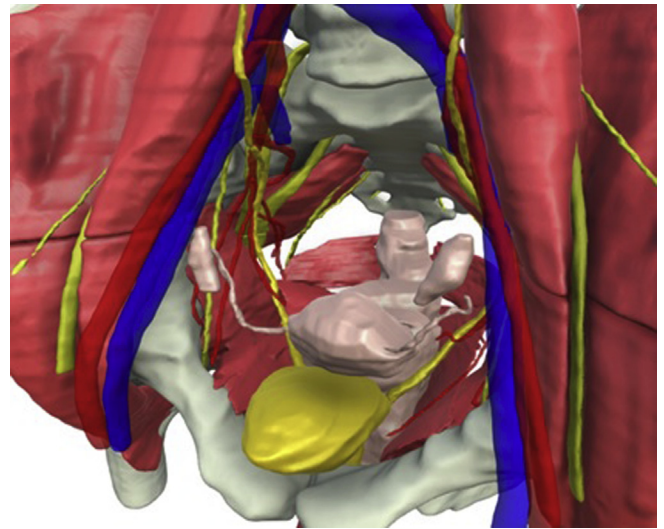
FIGURE 3
Subsets of the pelvis



The different subsets of the pelvis shown separately, that is, bones (top left), muscles (top right), blood vessels (bottom left), and nerves (bottom right).

Singer. Three-dimensional female pelvis model for teaching. Am J Obstet Gynecol 2020.

FIGURE 4
Close-up of the pelvis



A close-up illustrating the complex topographic anatomy of the female pelvis.

Singer. Three-dimensional female pelvis model for teaching. Am J Obstet Gynecol 2020.